

Remarks

Applicants respectfully request reconsideration of this application as amended.

Claims 1, 2, 12, 13, 15, 21 and 22 have been amended. No claims have been cancelled.

Claims 24-32 have been added. Therefore, claims 1, 2, 6, 12-16 and 21-32 are presented for examination.

In the Office Action, claims 21-23 stand rejected under 35 U.S.C. §112 Rejection, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants submit that the claims have been amended to appear in proper condition for allowance.

Claims 1, 2, 6, 12-16 and 21-22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kamiya (U.S. Patent No. 5,809,335) in further view of the applicant admitted prior art (AAPA). Applicants submit that the present claims are patentable over any combination of Kamiya and the APA.

Kamiya discloses a method and a data transfer apparatus capable of handling DMA block transfer interruptions. See Kamiya at Abstract. The data transfer apparatus includes a plurality of direct memory access (DMA) channels each having different priorities and at least one backup channel information memory for saving control information necessary for a restart of an interrupted DMA transfer through one of the DMA channels. The data transfer apparatus further includes a control means responsive to transfer commands, which command DMA transfers through the DMA channels. *Id.* In addition, the control means executes various interrupt handling steps when a transfer command interrupts an execution of a DMA transfer through one of the DMA channels having a lower priority than the priority of the DMA channel used by the interrupting transfer command, so that an interruption of an important data transfer can be prevented. *Id.*

Nevertheless, Kamiya does not disclose or suggest a DMA controller that terminates a DMA transfer before a terminal count is reached upon receiving an early termination

request signal from the I/O device. Moreover, Kamiya does not disclose or suggest a DMA controller that re-executes a DMA transfer with an I/O device upon receiving a request from the I/O device.

The APA rejection is based upon applicants' background section in the specification. The background section discloses an I/O device coupled to a DMA channel. See Specification at Fig. 4A and page 2, line 13 – page 3, line 8. Nevertheless, applicants background section does not disclose or suggest a DMA controller that terminates a DMA transfer before a terminal count is reached upon receiving a retransmit request signal from the I/O device, or a DMA controller that re-executes a DMA transfer with an I/O device upon receiving a request from the I/O device.

Claim 1 recites an input/output (I/O) device coupled to the DMA controller, wherein the DMA controller terminates a DMA transfer before a terminal count is reached upon receiving an early termination request signal from the I/O device. As discussed above, neither Kamiya, nor the APA disclose or suggest such a limitation. Kamiya discloses a DMA controller capable of handling block transfer interruptions. However, there is no suggestion in Kamiya of a DMA controller receiving a request from an I/O device to terminate a data transfer.

Since neither Kamiya nor the APA disclose or suggest an I/O device that transmits a request to terminate a DMA transfer before a terminal count is reached upon receiving an early termination request signal from the I/O device, any combination of Kamiya and the APA would also fail to disclose or suggest such a limitation. Therefore, claim 1 is patentable over Kamiya in view of the APA. Claims 2, 6 and 24-28 depend from claim 1 and include

additional limitations. Therefore, claims 2, 6 and 24-28 are also patentable over Kamiya in view of the APA.

Claim 12 recites an input/output (I/O) device coupled to the DMA controller, wherein the DMA controller re-executes a DMA transfer with the I/O device upon receiving a retransmit request signal from the I/O device. Kamiya does not disclose or suggest a DMA controller receiving a request from an I/O device to retransmit a data transfer. In addition, the APA does not disclose or suggest such a limitation. Since neither Kamiya nor the APA disclose or suggest an I/O device that transmits a request to retransmit a DMA transfer, any combination of Kamiya and the APA would also fail to disclose or suggest such a limitation. Therefore, claim 12 is patentable over Kamiya in view of the APA. Claims 29-32 depend from claim 12 and include additional limitations. Therefore, claims 29-32 are also patentable over Kamiya in view of the APA.

Claim 13 recites receiving a request signal at a DMA controller from a first device indicating a request by the first device to re-transmit the data between the first device and a second device. For the reasons described above with respect to claim 12, claim 13 is also patentable over Kamiya in view of the APA. Because claim 14 depends from claim 13 and includes additional limitations, claim 14 is also patentable over Kamiya in view of the APA.

Claim 15 recites receiving a request signal at a DMA controller from a first device indicating a request by the first device to re-transmit the data between the first device and a second device. For the reasons described above with respect to claim 12, claim 15 is also patentable over Kamiya in view of the APA. Since claims 16, and 21-23 depend from claim 15 and include additional limitations, claims 16, and 21-23 are also patentable over Kamiya in view of the APA.

Applicants respectfully submit that the rejections have been overcome, and that the claims are in condition for allowance. Accordingly, applicants respectfully request the rejections be withdrawn and the claims be allowed.

The Examiner is requested to call the undersigned at (303) 740-1980 if there remains any issue with allowance of the case.

Please charge any shortage to our Deposit Account No. 02-2666.

Respectfully submitted,

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